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10/519,046	08/19/2005	Satoshi Murouchi	AK-481XX	6619

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EXAMINER	
NELSON, MICHAEL B	

ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,046	MUROUCHI ET AL.	
	Examiner	Art Unit	
	MICHAEL B. NELSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 4-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments to the claims filed on 06/26/08 have been entered. The amendment to the specification is directed towards a non-existent section (i.e. page 24 of a 21 total page document). From the remarks it appears that the amendment to the specification was meant to be directed towards the abstract, if this is so, appropriate corrections are needed before the objection can be withdrawn. The 112 2nd paragraph rejections have been withdrawn subsequent to applicant's amendments to the claims. Claim 3 has been cancelled and claims 1, 2 and 4-9 are currently under examination on the merits.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda (U.S. 2001/0012862), and further in view of Tanaka (U.S. 5,837,366).

Regarding claim 1, Maeda discloses a molded product obtained by the injection molding of a wholly aromatic liquid crystal polyester resin composition which comprises

(See [0037], the ASTM dumbbell is a molded article and it is disclosed as being injection molded with the wholly aromatic liquid crystal polyester resin composition of the invention ([0007]-[0012]).

- 45 to 90 percent by weight of a wholly aromatic liquid crystal polyester having a melting point of 320°C or more,

(See [0009]. The composition is disclosed using a basis of 100 parts liquid crystal polyester resin composition, which is wholly aromatic. The lowest and highest percent by weight of liquid crystal polyester are 52.6wt% (i.e. 100/(100+50+40) and 98.0wt% (i.e. 100/(100+2+0)), respectively. This calculated range significantly overlaps the instant claimed range. Also see Table 1, Example 1. The example discloses a liquid crystal polyester composition of 85.0wt% (i.e. 100/(100+11.8+5.9), which falls within the claimed range. Also see [0051], the liquid crystal polyester is disclosed as having a

flow beginning temperature, or melting temperature, of 380 ˚C, which falls within the claimed range.)

- 10 to 40 percent by weight of an inorganic spherical hollow material having an aspect ratio of 2 or less,

(See [0029], the materials for the hollow spheres are disclosed as being inorganic and spheres inherently have an aspect ratio of 1, which is within the claimed range. Also see [0009]. The composition is disclosed using a basis of 100 parts liquid crystal polyester resin composition. The lowest and highest percent by weight hollow spheres are 0.141wt% (i.e. 2/(100+2+40) and 33.3wt% (i.e. 50/(100+50+0)), respectively. This calculated range significantly overlaps the instant claimed range. Also see, Table 1, Example 2. The example discloses a liquid crystal polyester composition having inorganic hollow spheres at 15.0wt% (i.e. 18.8/(100+18.8+6.3)), which falls within the claimed range.)

- and 0 to 15 percent by weight (100 percent by weight as a total) of an inorganic filler

(See [0009]. The composition is disclosed using a basis of 100 parts liquid crystal polyester resin composition. The lowest and highest percent by weight of inorganic fiber are 0 and 28.2wt% (i.e. 40/(100+2+50)), respectively. This calculated range completely overlaps the instant claimed range. Also see, Table 1, Example 1. The example discloses a liquid crystal polyester composition having inorganic hollow spheres at 5.01wt% (i.e. 5.9/(100+11.8+5.9)), which falls within the claimed range.)

Regarding the apparent viscosity of the liquid crystal polyester, Maeda discloses a liquid crystal polyester with viscosity of 4800 Pa's (i.e. 4800 poise) at a "flow beginning temperature" (i.e. melting point). Since the viscosity is below 5000 poise at the melting point, measuring the viscosity at temperature above the melting point would result in even lower viscosities. Therefore the apparent viscosity of the liquid crystal polyester as disclosed in Maeda reads on the instant limitations.

Maeda does not explicitly disclose the specific dielectric constant of 3.0 or less and dielectric dissipation factor of 0.04 or less of the molded product. However, in light of the substantially identical molded product composition and the substantially identical apparent viscosity and the substantially identical hollow sphere and inorganic filler characteristics and the substantially identical liquid crystal polyester preparation components in the molded article as taught by Maeda with the instant molded article, it will posses the claimed properties.

Maeda discloses inorganic filler (glass fibers) being included for increasing strength ([0033]) but Maeda does not specifically disclose the aspect ratio of that inorganic filler.
Tanaka does disclose an inorganic filler having an aspect ratio of 4 or more.

(See C7, L33-46. The inorganic filler is glass fibers with a length of 10-700 micrometers and a diameter of 1-15 micrometers, which at the lowest is an aspect ratio of 10, which is within the claimed range.)

Furthermore, Tanaka discloses that the glass fibers of the particular dimensions used in his invention increase the mechanical strength of the molded product while still being uniformly dispersed in the resin (C7, L33-46). Tanaka's invention is drawn to the

field of injection molded articles (C10, L17-35) and particularly to injection molded articles having a small thickness (C11, L10-20) which is meant to be precisely and efficiently obtained by injection molding (C11, L25-35).

The inventions of both Maeda and Tanaka are drawn to the field of injection molded articles containing mechanical reinforcement from inorganic fillers and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the glass fibers of Maeda having unspecified aspect ratios by using a glass fibers having the particular dimensions of Tanaka for the purposes of imparting increased mechanical strength and uniform filler dispersion.

Regarding claim 2, modified Maeda discloses all of the claimed limitations as set forth above. Maeda also discloses a molded product wherein said wholly aromatic liquid crystal polyester is prepared by the polycondensation of 80 to 100 percent by mole of

- p-hydroxy benzoic acid (I),

  (See [0021], (A1))

- terephthalic acid (II), and

  (See [0022], (B1) and (B2) are both terephthalic acids)

- 4,4'- dihydroxy diphenyl (III) (including the derivatives)

  (See [0023], (C1))

- (provided that a total of (I) and (II) is made more than 60 mole percent) and 0 to 20 percent by mole of other aromatic compound which can conduct a decondensation reaction with any one of (I), (II), or (III).

(See [0051]. The liquid crystal polyester resin composition is 100% by mole I, II and III (A1, B1 and B2, and C3, respectively), which falls within the claimed range. Also, I and II are at a molar percent of 75%, which is within the claimed range. Also, no other aromatic compound is used in the embodiment of the composition, which falls within the claimed range.)

Regarding claim 4, modified Maeda discloses all of the claimed limitations as set forth above. Additionally, Maeda discloses a molded product wherein the inorganic spherical hollow material having an aspect ratio of 2 or less is an average particle diameter of 5 to 200 micrometer, and a rate of volume hollowness of 50 percent or more.

(See [0052] the glass balloon 1 has a particle diameter of 30 micrometers, which falls within the claimed range. Also the balloon has a volume hollowness of 76% which is within the claimed range. Also, being an inorganic sphere, the balloon inherently has an aspect ratio of 1, which is within the claimed range.)

Regarding claim 5, modified Maeda discloses all of the claimed limitations as set forth above. Additionally Maeda discloses a molded product with inorganic filler with a weight percent in the range of 5 to 15.

(See [0009]. The composition is disclosed using a basis of 100 parts liquid crystal polyester resin composition, which is wholly aromatic. The lowest and highest percent by weight of inorganic fiber are 0 and 28.2wt% (i.e. 40/(100+2+50)), respectively. This calculated range completely overlaps the instant claimed range. Also see, Table 1, Example 1. The example discloses a liquid crystal polyester composition having inorganic hollow spheres at 5.01wt% (i.e. 5.9/(100+11.8+5.9)), which falls within the claimed range.)

Maeda does not disclose a molded product with the inorganic filler having an aspect ratio of 4 or more is a glass fiber having an average diameter of 20 micrometers or less and/or talc having an average particle diameter of 100 micrometers.

Tanaka does disclose a molded product with the inorganic filler having an aspect ratio of 4 or more is a glass fiber having an average diameter of 20 micrometers or less and/or talc having an average particle diameter of 100 micrometers.

(See C7, L33-46. The inorganic filler, used in the stripping finger injection molded article (C10, L17-35) is glass fibers with a length of 10-700 micrometers and a diameter of 1-15 micrometers, which at the lowest is an aspect ratio of 10, which is within the claimed range. The disclosed range of the fiber diameter substantially overlaps the claimed range and the upper endpoint, (15 micrometers), lies within the claimed range.)

Furthermore, Tanaka discloses that the glass fibers of the particular dimensions used in his invention increase the mechanical strength of the molded product while still being uniformly dispersed in the resin (C7, L33-46). Tanaka's invention is drawn to the

field of injection molded articles (C10, L17-35) and particularly to injection molded articles having a small thickness (C11, L10-20) which is meant to be precisely and efficiently obtained by injection molding (C11, L25-35).

The inventions of both Maeda and Tanaka are drawn to the field of injection molded articles containing mechanical reinforcement from inorganic fillers and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the glass fibers of Maeda having unspecified aspect ratios by using a glass fibers having the particular dimensions of Tanaka for the purposes of imparting increased mechanical strength and uniform filler dispersion.

Regarding claim 6, modified Maeda discloses all of the claimed limitations as set forth above. Maeda does not disclose a molded product comprising a portion of a thickness of 0.5mm or less, however one having ordinary skill in the art would have adjusted the thickness of the molded article produced from the injection molding composition to whatever thickness was required by the intended marketable use.

Maeda does not explicitly disclose the specific relative dielectric constant of 3 or less of the molded product. However, in light of the substantially identical molded product composition and the substantially identical apparent viscosity and the substantially identical hollow sphere and inorganic filler characteristics and the substantially identical liquid crystal polyester preparation components in the molded product as taught by Maeda with the instant molded product, it will, posses the claimed properties.

Regarding claim 7, modified Maeda discloses all of the claimed limitations as set forth above. Additionally, the reference discloses a molded product comprising a portable wireless telecommunications equipment having said molded product as a fixing or a holding member of a transmitting and receiving component.

(See [0048], parts for communication apparatuses, such as telephones and modems, which have transmitting and receiving parts, as well as holding members (heater-holder) are disclosed as potential embodiments of the molded product.)

Regarding claim 8, modified Maeda discloses all of the claimed limitations as set forth above. Additionally, the reference discloses a molded product wherein:

- an apparent viscosity at a melting point +20°C of said wholly aromatic liquid crystal polyester is 5,000 poise or less;

  (See rejection of instant claim 3 in the current office action.)
- the inorganic spherical hollow material having an aspect ratio of 2 or less is an average particle diameter of 5 to 200 micrometers, and a rate of volume hollowness of 50 percent or more;

  (See rejection of instant claim 4 in the current office action.)
- and the inorganic filler having an aspect ratio of 4 or more is a glass fiber having an average diameter of 20 micrometers or less and/or talc having an average particle diameter of 100 micrometers or less and additionally the weight percent is in a range of 5 to 15.

  (See rejection of instant claim 5 in the current office action.)

Regarding claim 9, modified Maeda discloses all of the claimed limitations as set forth above. Additionally, the reference discloses a molded product comprising:

- a portion of a thickness 0.5mm or less and comprising a relative dielectric constant of said portion 3 or less; and

  (See rejection of instant claim 6 in the current office action.)

- a portable wireless telecommunications equipment having said molded product as a fixing or a holding member of a transmitting and receiving component.

  (See rejection of instant claim 7 in the current office action.)

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 11/578,980.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims 1-9 only recite limitations which are also recited in claims 1-10 of Applicaiton No. 11/578,980.

The dielectric constant functional limitations in instant claims 1, 6, 8 and 9 would be inherent since the structural limitations on the molded product (i.e. the molded product composition, the liquid crystal polymer composition, and the specific properties of the hollow spheres and inorganic filler) are substantially identical. Also, while the limitations on the application of the molded product as telecommunication equipment, as in instant claims 6 and 9, is absent from the claims of Applicaiton No. 11/578,980, it would have been obvious to one having skill in the arts at the time of the invention to have applied the injection moldable liquid crystal polyester composition to all marketable injection moldable products, including telecommunication equipment. This is a provisional obviousness-type double patenting rejection.

Response to Arguments

8. Applicant's arguments filed 06/26/08 have been fully considered but they are not persuasive.

9. Regarding applicant's arguments beginning on page 11 related to Graph 1 and the purported unexpected results of the dielectric constant as compared to the fraction of hollow

sphere rupture, the graph of the example in the instant specification does not provide sufficient evidence of unexpected results. The two areas of graph 1, above and below 0.1 X, do not provide sufficient evidence in that there are no points taken from the ranges between 0.1 and 0.3 X to prove some sort of unexpected relationship which occurs between values above and below 0.1. It is possible, and indeed likely, that the points on the graph follow some trend (i.e. a roughly logarithmic trend) which one of ordinary skill in the art would be able to use to predict fracture ratio conditions which would result in beneficially low dielectric constants (See MPEP 716.02, "unexpected results for a claimed range as compared with the range disclosed in the prior art had been shown by a demonstration of 'a marked improvement, over the results achieved under other ratios, as to be classified as a difference in kind, rather than one of degree'").

Furthermore there is no mention of fracture rate in the instant claims and therefore any claim thereto in terms of unexpected results is moot (See MPEP 716.02(b) "Evidence of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art **which is commensurate in scope with the claims**").

With regards to applicant's use of the examples from Maeda with graph 1 to show the purported dielectric constant of greater than 3.0, the examiner notes that lower endpoint of the void fraction, 0.121, would appear from the limited sample size of the graph to be below 3.0 in terms of its dielectric constant. More to the point, there appears to be insufficient data, even in the regions of the graph where data is shown, to prove that at values exactly above 0.1, the dielectric constant is above 3.0.

10. Regarding applicants arguments beginning on page 12 related to the purported relationship between specific gravity and dielectric constant. Similar to graph 1, graph 2 lacks sufficient points, especially between 1.30 and 1.60 to show any evidence of unexpected results. Given the limited points available, graph 2 actually seems to provide support for a trend that one having ordinary skill in the art would have been able to use in order to predict an obvious way of reaching beneficially low dielectric constants (i.e. lowering the specific gravity via increasing the amount of non-fractured hollow particles). With regards to applicant's use of the examples from Maeda with graph 2 to show the purported dielectric constant of greater than 3.0, the examiner notes that lower endpoint of the specific gravity (1.21) is sufficiently close to example 3 from the instant specification, which has a dielectric constant of 2.91.

11. In general, as to the ability of invention of Maeda to reach dielectric constant levels of less than 3.0, applicant has not provided sufficient evidence to prove that the disclosed invention of Maeda would not result in a dielectric constant of less than 3.0. Since the composition of Maeda appears to be substantially similar (including the apparent viscosity of the liquid crystal polyester as explained in the rejection of claim 1 above) in every appreciable way to the invention as instantly claimed, the dielectric constant would be less than 3.0.

To prove that the invention of Maeda does not posses a dielectric constant of less than 3.0, some additional evidence (i.e. an affidavit or declaration) would be required to prove that the closest example from Maeda (i.e. example 3), modified with fibers having the aspect ratio as taught by of Tanaka, does not have a dielectric constant of less than 3.0. Hypothetically assuming the dielectric constant is greater than 3.0, further proof would be required to show unexpected results at the values which differentiate the prior art from the instant invention

(otherwise it would be obvious to one having ordinary skill in the art to have routinely experimented with a variable (i.e. fracture rate) to achieve the low dielectric constant).

12. Regarding the arguments beginning on page 15 related to the lack of motivation to combine Maeda with Tanaka, the motivation to use the inorganic glass fiber size as taught by Tanaka for the unspecified sized glass fibers of Maeda is motivate by the fact the Maeda and Tanaka both describe the use of strengthening glass fibers while the sizes for Tanaka are disclosed as providing increased strength (See rejection of claim 1 above). While the resin composition of Tanaka is considerably different than Maeda, the general use of inorganic strengthening fibers in an injection molding composition would be relevant to one having ordinary skill especially to find an optimal size for the unspecified sized glass fibers of Maeda. Hence there is proper motivation to combine Maeda with Tanaka.

13. Acknowledgement is made of applicant's intention to overcome the double patenting rejection if and when the current application is found to be allowable.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571) 270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MN/
08/28/08

/Carol Chaney/
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